



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,236	10/18/2005	Jimmy Hwee Chew	2085-05400	5176

23505 7590 05/19/2009  
CONLEY ROSE, P.C.  
David A. Rose  
P. O. BOX 3267  
HOUSTON, TX 77253-3267

EXAMINER
----------

HOLLINGTON, JERMELE M

ART UNIT	PAPER NUMBER
----------	--------------

2829

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

05/19/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pathou@conleyrose.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,236	<b>Applicant(s)</b> CHEW ET AL.	
	<b>Examiner</b> Jermele M. Hollington	<b>Art Unit</b> 2829	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 April 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-19 and 22-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-19, 22-39 and 42-47 is/are rejected.
- 7) ☒ Claim(s) 40 and 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 17-19, 22-39 and 42-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuma et al (EP 1028455A2) in view of Adkins (7047857).

Regarding claim 17, Kazuma et al disclose a method for cutting at least one packaged substrate (CSP package 25), the method comprising: a) providing: a first movable mount (transfer means 14) for moving between a loading location (transfer unit 12) and a cutting location (cutting unit 11); and a second movable mount (transfer means 24) for moving between the cutting location (11) and an unloading location (boarding area 23), b) moving the first movable mount (14) from the loading location (12) to the cutting location (11) with the at least one packaged substrate (25) disposed thereon; c) cutting [via cutting means 19] the at least one

Art Unit: 2829

packaged substrate (25) in a first reference direction (Y-axial direction) at the cutting location (11) [see col. 5, line 50 – column 6, line 9]; d) transferring the at least one packaged substrate (25) from the first movable mount (14) to the second movable mount (24) at the cutting location (11); e) cutting [via cutting means 19] the at least one packaged substrate (25) in a second reference direction (X-axial direction) [see col. 5, line 50 – column 6, line 9], the second reference direction (X-direction) being perpendicular to the first reference direction, at the cutting location (11), to produce the plurality of packaged semiconductor devices (25); and f) moving the second movable mount (24) from the cutting location (11) to the unloading location (boarding section 23) for transporting the plurality of packaged semiconductor devices (25) to the unloading location (23). However, they do not disclose the cutting is done by a water jet cutting tool as claimed. Adkins disclosed a machine (30) comprising a pressure water jet cutting tool (46) with high pressure water jet for cutting at least one package substrate (work piece 34) located on a table (32) [see col. 4, lines 31-54 and col. 5, line 59-col. 6, line 6]. Further, Adkins teaches that the addition of water jet cutting tool is advantageous because it improves the ability for simultaneous operation, both in edge trimming and in cutting numerous apertures, holes and/or slots in substrate/work piece to reduce overall cutting time. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kazuma et al by adding water jet cutting tool as taught by Adkins in order to reduce the overall cutting time of substrate during the procedure of singulation of the substrate.

Regarding claim 18, Kazuma et al disclose loading the at least one packaged substrate (25) on the first movable mount (14).

Art Unit: 2829

Regarding claim 19, Kazuma et al disclose unloading the plurality of packaged semiconductor devices (25) from the second movable mount (24).

Regarding claim 22, Kazuma et al disclose aligning the at least one packaged substrate (25) on the first movable mount (14), wherein Adkins disclosed water jet cutting tool (46) [see above regarding claim 17 for further details on the water jet cutting tool].

Regarding claim 23, Kazuma et al disclose aligning the at least one packaged substrate (25) on the second movable mount (24), wherein Adkins disclosed water jet cutting tool (46) [see above regarding claim 17 for further details on the water jet cutting tool].

Regarding claim 24, Adkins disclose determining [via mechanism 123] a distance between the water jet cutting tool (46) [part of cutting apparatus (40)] and the at least one packaged substrate (34); and displacing the water jet cutting tool (46) relative the at least one packaged substrate (34) for adjusting the distance there between [see col. 7, lines 27-31 and col. 8, line 58- col. 9, line 10].

Regarding claim 25, Kazuma et al disclose (e) further comprises unloading the plurality of packaged semiconductor devices (25) from the second movable mount (24) at the unloading location (23).

Regarding claim 26, Kazuma et al disclose (c) further comprises moving the first movable mount (14) in the first reference direction (Y-axial direction) for facilitating cutting of that at least one packaged substrate (25) in the first reference direction (Y-direction).

Regarding claim 27, Kazuma et al disclose (c) further comprises directing the second reference direction (X-axial direction) for facilitating cutting of that at least one packaged substrate (25) along multiple parallel lines in the first reference direction (Y-direction), wherein

Art Unit: 2829

Adkins disclosed water jet cutting tool (46) using a high pressure water jet [see above regarding claim 17 for further details on the water jet cutting tool].

Regarding claim 28, Kazuma et al disclose wherein (e) further comprises rotating the packaged substrate (25) on the second movable mount (24) before moving the second movable mount (24) in the first reference direction (X-axial direction) for facilitating cutting of that at least one packaged substrate (25).

Regarding claim 29, Kazuma et al disclose (c) further comprises moving the second reference direction (X-axial direction) for facilitating cutting of that at least one packaged substrate (25) along multiple parallel lines in the second reference direction (X-direction), wherein Adkins disclosed water jet cutting tool (46) using a high pressure water jet [see above regarding claim 17 for further details on the water jet cutting tool].

Regarding claim 30, Kazuma et al disclose wherein (d) comprises picking the at least one packaged substrate (25) off the first movable mount (14) [via transfer means 40], moving the first movable mount (14) from the cutting location (11) to the loading location (12), moving the second movable mount (24) from the unloading location (23) to the cutting location (11), and placing the at least one packaged substrate (25) on the second movable mount (24).

Regarding claim 31, Kazuma et al disclose an apparatus for cutting a packaged substrate (CSP substrate 25) comprising: a set of transport guides (rails 31) having a length that extends in a first direction between a loading location (transfer unit 12), a cutting location (cutting unit 11), and an unloading location (boarding area 23), the cutting location (11) being disposed between the loading location (12) and the unloading location (23); a first movable mount (transferring means 14) coupled to the set of transport guides (31), the first movable mount (14) comprising a

Art Unit: 2829

first rotatable section [see col. 6, lines 3-7]; a second movable mount (transfer means 24) coupled to the set of transport guides (31), the second movable mount (24) comprising a second rotatable section [see col. 6, lines 3-7]; a first gantry (shuttle transferring means 40) extending in a second direction, the second direction being perpendicular the first direction. However, they do not disclose a water jet cutting tool as claimed. Adkins disclosed a machine (30) comprising a pressure water jet cutting tool (46) with high pressure water jet for cutting at least one packages substrate (work piece 34) located on a table (32) [see col. 4, lines 31-54 and col. 5, line 59-col. 6, line 6]. Further, Adkins teaches that the addition of water jet cutting tool is advantageous because it improves the ability for simultaneous operation, both in edge trimming and in cutting numerous apertures, holes and/or slots in substrate/work piece to reduce overall cutting time. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kazuma et al by adding water jet cutting tool as taught by Adkins in order to reduce the overall cutting time of substrate during the procedure of singulation of the substrate.

Regarding claim 32, Kazuma et al disclose the first movable mount (14) is displaceable along the set of transport guides (31) between the loading location (12) and the cutting location (11), the first movable mount (14) receiving the packaged substrate (25) at the loading location (12) before being displaced along the set of transport guides (31) for transferring the packaged substrate (25) to the cutting location (11).

Regarding claim 33, Kazuma et al disclose the packaged substrate (25) is cut in the first direction when disposed on the first movable mount (14).

Art Unit: 2829

Regarding claim 34, Kazuma et al disclose the second movable mount (24) is displaceable along the set of transport guides (31) between the cutting location (11) and the unloading location (23), the second movable mount (24) receiving the packaged substrate (25) from the first movable mount (14) at the cutting location (11).

Regarding claim 35, Kazuma et al disclose the second rotatable section (via carrier 32) rotates the packaged substrate (25) disposed on the second movable mount (24) for facilitating cutting thereof in the second direction.

Regarding claims 36-37, Adkins discloses the water jet cutting tool (46) comprising at least one water jet nozzle (nozzle 72) for supplying a water jet for cutting the packaged substrate (34) in each of the first and second directions wherein the water jet comprises at least one abrasive material [see col. 4, lines 31-54 and col. 5, line 59-col. 6, line 6 see also regarding claim 31 for details].

Regarding claim 38, Adkins discloses a distance detector (sensor cam 96a) mounted proximal the at least one water jet nozzle (72), the distance detector (96a) operable for determining a distance between the at least one water jet nozzle (72) and the packaged substrate (34).

Regarding claim 39, Adkins discloses an actuator (over travel limit cam 96b) coupled to the at least one water jet nozzle (72), the actuator (96b) being operable for displacing the at least one water jet nozzle (72) to thereby adjust the distance between the at least one water jet nozzle (72) and the packaged substrate (34).

Art Unit: 2829

Regarding claim 42, Kazuma et al disclose a pick and place assembly (combination of pick-up table 42 and pick-up and transfer means 43) configured to transfer the packaged substrate (25) from the first movable mount (14) to the second movable mount (24).

Regarding claim 43, Kazuma et al disclose a method for singulating a packaged substrate (25) comprising: loading a packaged substrate (25) onto a first movable mount (14) at a loading location (12); transferring the first movable mount (14) to a cutting location (11); cutting the packaged substrate (25) in a first direction; transferring the packaged substrate (25) onto a second movable mount (24); cutting the packaged substrate (25) in a second direction; and transferring the second movable mount (24) to an unloading location (23). However, they do not disclose the cutting is done by a water jet cutting tool as claimed. Adkins disclosed a machine (30) comprising a pressure water jet cutting tool (46) with high pressure water jet for cutting at least one packages substrate (work piece 34) located on a table (32) [see col. 4, lines 31-54 and col. 5, line 59-col. 6, line 6]. Further, Adkins teaches that the addition of water jet cutting tool is advantageous because it improves the ability for simultaneous operation, both in edge trimming and in cutting numerous apertures, holes and/or slots in substrate/work piece to reduce overall cutting time. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Kazuma et al by adding water jet cutting tool as taught by Adkins in order to reduce the overall cutting time of substrate during the procedure of singulation of the substrate.

Regarding claim 44, Kazuma et al disclose each of cutting the packaged substrate (25) in the first direction and cutting the packaged substrate (25) in the second direction is performed at the cutting location (11).

Art Unit: 2829

Regarding claim 45, Kazuma et al disclose the first direction and the second direction are orthogonal.

Regarding claim 46, Adkins discloses adjusting [via sensor cam 96a] a distance between the water jet cutting tool (46) and the packaged substrate (34) at the cutting location (40); and aligning the packaged substrate (25) relative the water jet cutting tool (46) at the cutting location (40) [see regarding claim 43 for further details].

Regarding claim 47, Kazuma et al disclose transferring the first movable mount (14) to the cutting location (11) and transferring the second movable mount (24) to the unloading location (23) occur in a generally simultaneous synchronized manner.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for details.

5. Claims 40-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: regarding claims 40-41, the primary reason for the allowance of the claims is due to image capture devices capturing an image of the packaged substrate disposed on movable mounts. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:00 EST) First Friday Off.

Art Unit: 2829

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on (571) 272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jermele M. Hollington/  
Primary Examiner  
Art Unit 2829

/J. M. H./  
May 11, 2009